

Work Order ID 61955

Monday, September 13, 2010 9:58:19 AM

Page 1

Item ID: D205-634-041

Accept

Setup Start

Revision ID:

Stop

Item Name: Replacement Skidtube

Start Date: 9/13/2010 Start Qty: 1.00

Cust Item ID:

Required Date: 9/28/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date: 10-9-13

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D2580

Rev D

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

N/A

110

0.00



CNC Bend 1

BENDING MACHINE - SKIDTUBES

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

DP

109-14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

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Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends

2- C'sink holes as per dwg without cutting fluid

3- Prepare tube for welding, remove alodine as required.

BB 10/09/15

130

0.00



QC

QC5- Inspect part completeness to step on W/O

Memo

0.00

Quality Control

*8/10/09/15**(HL)*

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Run Start



Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Skidtubes

Memo

0.00

Skidtubes

1-Weld step D2576 as per Dwg. D2580 and QSI 004

A/R□□□ Aluminum Rod

M114877

BE 10/09/15

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill

A/R□□□ Aluminum Rod

M114877

BE 10/09/15

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

D 10/9/22

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64", adjust stopper not to hit web. Debur

5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580. Debur holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

D 10-9-23

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Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150



QC

Quality Control

QC10- Inspect visual per QSI004- ground welds

0.00

Memo

0.00

8/10/09/23

160



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

8/10/09/23

170



HandFinish

Hand Finishing

Pressure Wash per QSI005 4.3

0.00

Memo

0.00

Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.

BR 10-9-27.

W/O:		WORK ORDER CHANGES					
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Run Start



Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180



Powdercoat

Powder Coating

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

10-9-28

Memo

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

0.00

0

190



QC

Quality Control

QC3- Inspect Part Finish

0.00

=> 10/09/28

Memo

0.00

1

0

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ M115114 ☐

Sikaflex expire date: 11/01

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with

Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ M115114 ☐

Sikaflex expire date: 11/01

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch: M115028

⇒ JU 10/09/28

1

Ø

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

220

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD205-634-041

Location: _____

PPP Rev: _____

PAP 61422

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

ME
10-10-08

W/O:		WORK ORDER CHANGES					
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Page 1

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Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube



Start Date: 9/13/2010

Required Date: 9/28/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:N02.08.28FP was QC5 in Step 27; Added QC5 to Step 30KJ
 IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD
 IPP Rev. O 06.02.28 Added paperwork EC
 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2580-1 		Manufactured	No			110	Each	3.0000	1	1			
205 Skidtube bent detail													

Location	Loc Qty	Loc Code
LG	2	
57028	1	
61191	1	
ST046	1	
59856	1	

① DP 10-9-14

D2576-3 	Manufactured	No				140	Each	76.0000	1	1			
Step (maching detail)													

Location	Loc Qty	Loc Code
LG	76	
46661	28	
52215	48	

1 BE 10-9-15

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Replacement Skidtube

Start Date: 9/13/2010

Required Date: 9/28/2010

Start Qty: 1.00

Required Qty: 1.00

D2579 Manufactured No 140 Each 304.0000 20 20



Crossbolt Spacer



Location Loc Qty Loc Code

LG	304	
57052	5	
57348	4	
58433	2	
59113	22	
60845	102	
61199	169	

20 BE 10/09/15

D2855 Manufactured No 200 Each 72.0000 1 1



Cap



Location Loc Qty Loc Code

FP6	1	
56613	1	
ST026	71	
50513	1	
50770	28	
51539	2	
53791	40	

11 10/09/28

AN3-5A Purchased No 200 Each 1,517.000 2 2



Bolt



Location Loc Qty Loc Code

ST350	1517	
105057	517	
115016	500	
115371	500	

VI 2 11 10/09/28

X2

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Start Date: 9/13/2010

Required Date: 9/28/2010

Start Qty: 1.00

Required Qty: 1.00

AN960JD10L NAS1149D0332L Purchased

No

200

Each

2,219.000

2

2



JH 10/09/28

Washer

Location

Loc Qty

Loc Code

ST348

2219

M1143-18

XZ

110985

2219

ALS7-1032-130 Purchased

No

200

Each

1,868.000

50

50



JH 10/09/28

Insert

Location

Loc Qty

Loc Code

FP

851

M114723

X50

115079

851

ST282

1017

113238

17

115502

500

115581

500

AN3C4A Purchased

No

200

Each

2,220.000

50

50



JH 10/09/28

BOLT

Location

Loc Qty

Loc Code

ST303

192

115438

192

ST350

2028

114108

14

114416

12

114523

2

115300

1000

115589

1000

X50

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Start Date: 9/13/2010

Required Date: 9/28/2010

Start Qty: 1.00

Required Qty: 1.00

AN960C10L NAS1149C0332 Purchased No

200

Each

155.0000

50

50



washer



YH 10/09/28

Location

Loc Qty

Loc Code

ST245

155

107534

29

M115698

X50

109545

54

111548

72

D3566-13 Manufactured No

200

Each

19.0000

1

1



Gasket



YH 10/09/28

Location

Loc Qty

Loc Code

FP012

19

59661

11

X1

60209

8

D3566-5 Manufactured No

200

Each

20.0000

1

1



Gasket



YH 10/09/28

Location

Loc Qty

Loc Code

FP

20

60869

20

X1

D3566-1 Manufactured No

200

Each

30.0000

2

2



Gasket



YH 10/09/28

Location

Loc Qty

Loc Code

FP015

30

57715

2

60202

10

61656

18

X2

W/O:		WORK ORDER CHANGES					
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Required Date: 9/28/2010



Start Qty: 1.00

Required Qty: 1.00

D3564-11	Manufactured	No	200	Each	12.0000	1	1
							<u>HL 10/09/28</u>
Wearshoe							



<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP019	12	
<u>60302</u>	12	<u>xl</u>

D3564-13	Manufactured	No	200	Each	16.0000	1	1
							<u>HL 10/09/28</u>
Wearshoe							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP17	16	
<u>59660</u>	4	<u>xl</u>
60862	12	

D3564-9	Manufactured	No	200	Each	14.0000	1	1
							<u>HL 10/09/28</u>
Wearshoe							

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP	1	
55334	1	
FP019	13	
<u>60236</u>	13	<u>xl</u>

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Required Date: 9/28/2010

Start Qty: 1.00

Required Qty: 1.00

D3564-5

Manufactured No

200

Each

20.0000

1

1



Wearshoe



21 10/09/28

Location

Loc Qty

Loc Code

FG

1

34806

1

FP19

10

57525

1

58709

1

61699

8

FP-19

9

60868

9

x1

D2594-3

Manufactured No

200

Each

139.0000

16

16



O-Ring, 205 Skidtube



21 10/09/28

Location

Loc Qty

Loc Code

FP

139

55546

19

58191

12

59358

108

MB 61762

x16

D2594-1

Manufactured No

200

Each

275.0000

16

16



Plug, 205 Skidtube



21 10/09/24

Location

Loc Qty

Loc Code

FP

183

42807

112

55002

71

FP14

92

58434

15

59110

77

1361932

x3

x13

W/O:		WORK ORDER CHANGES					
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ENGINEERING
UNCONTROLLED COPY
SUBJECT TO APPROVAL

WITHOUT
WORK ORDER
NO. 019-55

RELEASED
07-06-28

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27	TITLE 205 SKIDTUBE ASSEMBLY		SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

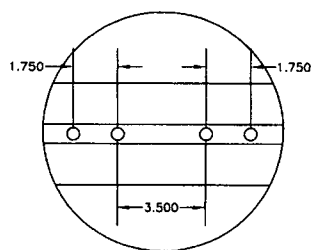
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

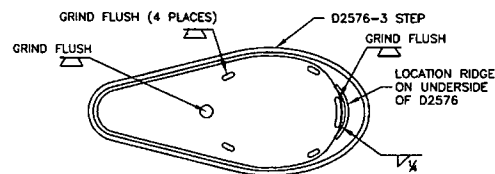
NOTE: Date & initial all entries

DETAIL A
SCALE 5:24

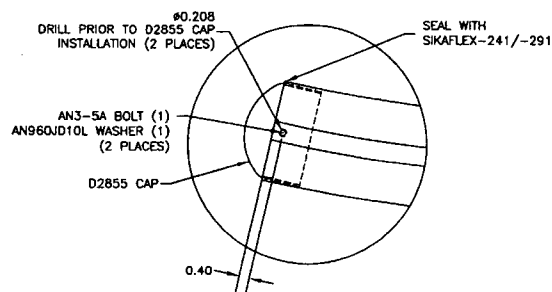


RELEASED
07 Dec 88

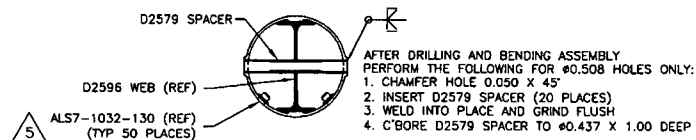
DETAIL B
SCALE 5:24



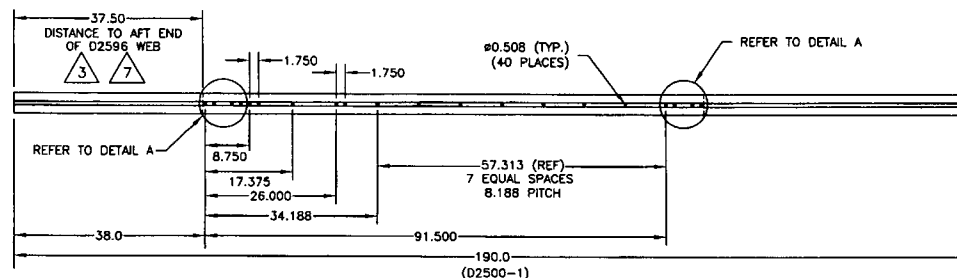
DETAIL C
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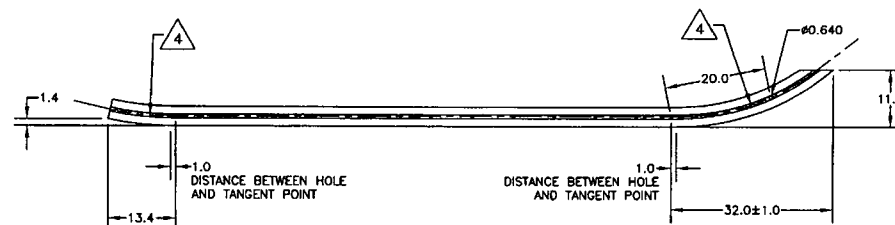
SECTION D-D
SCALE 5:24



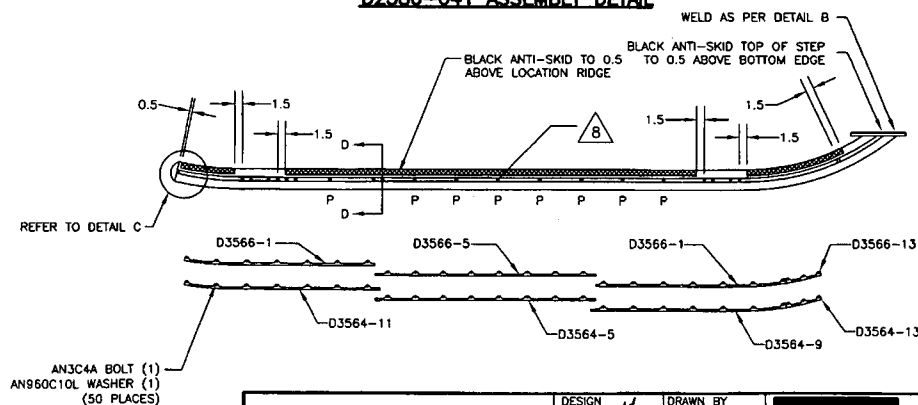
D2580-1 DRILLING DETAIL



D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



D2580-041 NOTES

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

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DESIGN	DRAWN BY	DART	DART AEROSPACE LTD. HARRISBURG, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D2580	REV. D SHEET 2 OF 3
DATE 07.02.27	TITLE 205 SKIDTUBE ASSEMBLY	SCALE 1:24	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

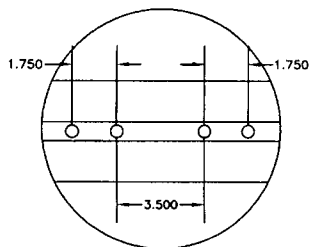
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

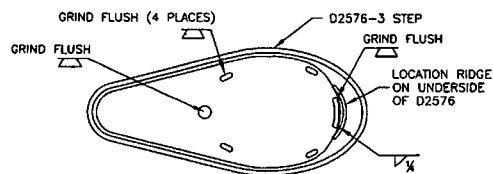
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DETAIL E
SCALE 5:24

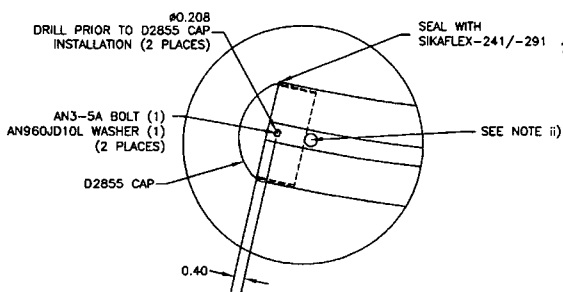


DETAIL F
SCALE 5:24

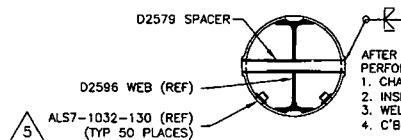


RELEASED
07.06.18

DETAIL G
SCALE 5:24

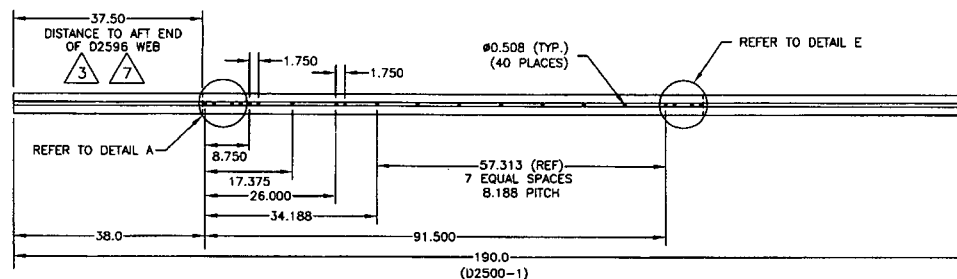


SECTION H-H
SCALE 5:24

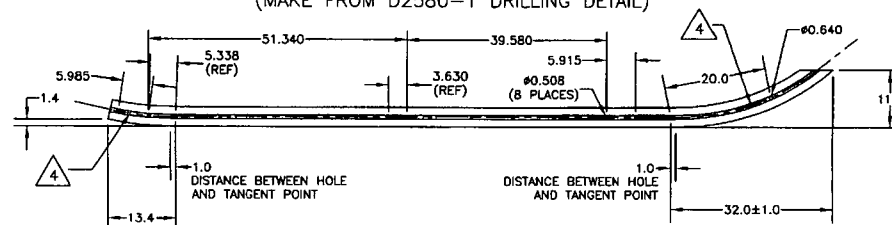


- AFTER DRILLING AND BENDING ASSEMBLY PERFORM THE FOLLOWING FOR Ø0.508 HOLES ONLY:
1. CHAMFER HOLE 0.050 X 45°
 2. INSERT D2579 SPACER (20 PLACES)
 3. WELD INTO PLACE AND GRIND FLUSH
 4. C'BORE D2579 SPACER TO Ø0.437 X 1.00 DEEP

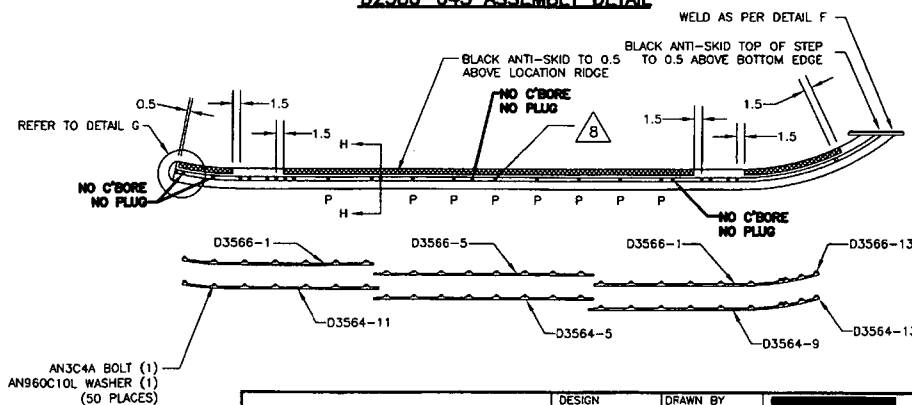
D2580-1 DRILLING DETAIL



D2580-5 BENDING AND CUTTING DETAIL
(MAKE FROM D2580-1 DRILLING DETAIL)



D2580-045 ASSEMBLY DETAIL



D2580-045 NOTES

- FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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DESIGN RH	DRAWN BY RH	DART DART AEROSPACE LTD. WARRIMUR, ONTARIO, CANADA
CHECKED H	APPROVED H	DRAWING NO. D2580
DATE 07.02.27	TITLE 205 SKIDTUBE ASSEMBLY	REV. 0 SHEET 3 OF 3 SCALE 1:24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 238

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 61352
Part number: D205-634-041
Description: 205 skid tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminium
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Paul Dail Date of Test Coupon 10.08.25
Welder Barclay Elliott Date of Test Coupon 10.09.25

The above named individual is qualified in accordance with AWS D17.1.2001 to weld